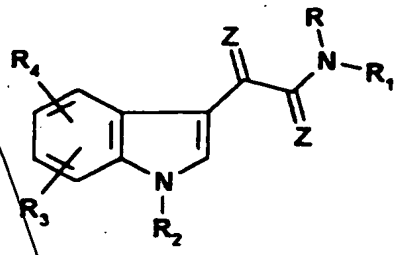
~~Patent Claims~~

WHAT IS CLAIMED IS

1. **N-substituted indol-3-glyoxylamides of the formula 1**



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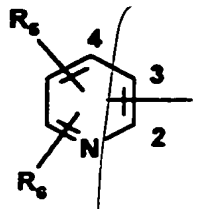
and their acid addition salts,
where the radicals R, R_1, R_2, R_3, R_4 and Z have the following meaning:

R = hydrogen, (C_1-C_6)-alkyl, where the alkyl group can be mono- or polysubstituted by the phenyl ring. This phenyl ring, for its part, can be mono- or polysubstituted by halogen, (C_1-C_6)-alkyl, (C_3-C_7)-cycloalkyl, by carboxyl groups, carboxyl groups esterified with (C_1-C_6)-alkanols, trifluoromethyl groups, hydroxyl groups, methoxy groups, ethoxy groups, benzyloxy groups and by a benyl [sic] group which is mono- or polysubstituted in the phenyl moiety by (C_1-C_6)-alkyl groups halogen atoms or trifluoromethyl groups,

R_1 can be a phenyl ring which is mono- or polysubstituted by (C_1-C_6)-alkyl, (C_1-C_6)-alkoxy, hydroxyl, benzyloxy, nitro, amino, (C_1-C_6)-alkylamino, (C_1-C_6)-alkoxy-carbonylamino and by a carboxyl group or a carboxyl group esterified by (C_1-C_6)-alkanols, or is a pyridin structure of the formula II



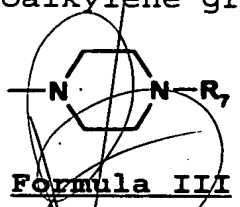
Formula II

where the pyridin structure is alternatively bonded to the ring carbon atoms 2, 3 and 4 and can be substituted by the substitutents R_5 and R_6. The radicals R_5 and R_6 can be identical or different and have the meaning (C_1-C_6)-alkyl, and also the meaning (C_3-C_7)-cycloalkyl, (C_1-C_6)-alkoxy, nitro, amino, hydroxyl, halogen and trifluoromethyl and are furthermore the ethoxy-carbonylamino radical and the group carboxy-alkyloxy in which the alkyl group can have 1-4 C atoms,

R_1 can furthermore be a 2- or 4-pyrimidinyl-heterocycle or a pyridylmethyl radical in which CH_2 can be in the 2-, 3-, 4-position where the 2-pyrimidinyl ring can be mono- or polysubstituted by the methyl group, furthermore are [sic] the 2-, 3- and 4-quinolyl structure substituted by (C_1-C_6)-alkyl, halogen, the nitro group, the amino group and the (C_1-C_6)-alkylamino radical, or are [sic] a 2-, 3- and 4-quinolyl methyl group, where the ring carbons of the pyridylmethyl and quinolylmethyl radical can be substituted by (C_1-C_6)-alkyl, (C_1-C_6)-alkoxy, nitro, amino and (C_1-C_6)-alkoxy-carbonylamino,

R_1 for the case where R is hydrogen or the benzyl group, can furthermore be the acid radical of a natural or unnatural amino acid, e.g. the α-glycyl, the α-sarcosyl, the α-alanyl, the α-leucyl, the α-isoleucyl, the α-seryl, the α-phenylalanyl, the α-histidyl, the α-prolyl, the

α-arginyl, the α-lysyl, the α-asparagyl and the α-glutamyl radical, where the amino groups of the respective amino acids can be present in unprotected or protected form and are possible protective groups for the amino function of the carbobenzoxy radical (Z radical) and the tert-butoxycarbonyl radical (BOC radical) and also the acetyl group. In the case of the asparagyl and glutamyl radical claimed for R_1, the second, nonbonded carboxyl group is present as a free carboxyl group or in the form of an ester with C_1-C_6-alkanols, e.g. as the methyl, ethyl or as the tert-butyl ester. R_1 can furthermore be the allylaminocarbonyl-2-methylprop-1-yl group. R and R_1, together with the nitrogen atom to which they are bonded, can furthermore form a piperazine ring of the formula III or a homopiperazine ring if R_1 is an aminoalkylene group in which



Formula III

R_7 is an alkyl radical, a phenyl ring which can be mono- or polysubstituted by (C_1-C_6)-alkyl, (C_1-C_6)-alkoxy, halogen, the nitro group, the amino function, by (C_1-C_6)-alkylamino, the benzhydryl group and the bis-p-fluorobenzylhydryl group,

R_2 can be hydrogen or the (C_1-C_6)-alkyl group, where the alkyl group can be mono- or polysubstituted by halogen and phenyl which for its part can be mono- or polysubstituted by halogen, (C_1-C_6)-alkyl, (C_3-C_7)-cycloalkyl, carboxyl groups, carboxyl groups esterified with (C_1-C_6)-alkanols, trifluoromethyl groups, hydroxyl groups, methoxy groups, ethoxy groups or benzyloxy groups. The (C_1-C_6)-alkyl group counting as R_2 can furthermore be substituted by the 2-quinolyl group and the 2-, 3- and 4-pyridyl

structure, which in each case can both be mono- or polysubstituted by halogen, (C_1-C_4)-alkyl groups or (C_1-C_4)-alkoxy groups. R_2 is furthermore the aroyl radical, where the aryl moiety on which this radical is based is the phenyl ring which can be mono- or polysubstituted by halogen, (C_1-C_6)-alkyl, (C_3-C_7)-cycloalkyl, carboxyl groups, carboxyl groups esterified by (C_1-C_6)-alkanols, trifluoromethyl groups, hydroxyl groups, methoxy groups, ethoxy groups or benzyloxy groups,

R_3 and R_4 can be identical or different and are hydrogen, hydroxyl, (C_1-C_6)-alkyl, (C_3-C_7)-cycloalkyl, (C_1-C_6)-alkanoyl, (C_1-C_6)-alkoxy, halogen and benzyloxy. R_3 and R_4 can furthermore be the nitro group, the amino group, the (C_1-C_4)-mono- or dialkyl-substituted amino group, and the (C_1-C_3)-alkoxycarbonylamino function or the (C_1-C_3)-alkoxycarbonylamino- (C_1-C_3)-alkyl function,

Z is O or S,

and where the designation alkyl, alkanol, alkoxy or alkylamino group for the radicals R, R_1, R_2, R_3, R_4, R_5, R_6 and R_7 is normally to be understood as meaning "straight-chain" and "branched" alkyl groups, where "straight-chain alkyl groups" can be, for example, radicals such as methyl, ethyl, n-propyl, n-butyl, n-pentyl and n-hexyl and "branched alkyl groups" designate, for example, radicals such as isopropyl or tert-butyl. "Cycloalkyl" is to be understood as meaning radicals such as, for example, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl or cycloheptyl, additionally the designation "halogen" represents fluorine, chlorine, bromine or iodine, and the designation "alkoxy group" represents radicals such as, for example, methoxy, ethoxy, propoxy, butoxy, isopropoxy, isobutoxy or pentoxy.

Claim 3/2. A compound ~~Compounds~~ according to Claim 1 selected from the group consisting of:

N-(Pyridin-4-yl)-[1-(4-fluorobenzyl)indol-3-yl]-glyoxylamide

N-(Pyridin-4-yl)-(4-methylindol-3-yl)glyoxylamide

N-(Pyridin-3-yl)-[1-(4-fluorobenzyl)-indol-3-yl]-glyoxylamide

N-(Pyridin-3-yl)-(1-benzylindol-3-yl)glyoxylamide

N-(Pyridin-3-yl)-[1-(2-chorobenzyl)indol-3-yl]-glyoxylamide

N-(4-Fluorophenyl)-[1-(4-fluorobenzyl)indol-3-yl]-glyoxylamide

N-(4-Nitrophenyl)-[1-(4-fluorobenzyl)indol-3-yl]-gloxylamide

N-(2-Chloropyridine-3-yl)-[1-(4-fluorobenzyl)indol-3-yl]glyoxylamide

N-(Pyridin-4-yl)-(-benzylindol-3-yl)glyoxylamide

N-(Pyridin-4-yl)-[1-(3-pyridylmethyl)indol-3-yl]-glyoxylamide

N-(4-Fluorophenyl)-[1-(2-pyridylmethyl)indol-3-yl]-glyoxyamide

N-(4-Fluorophenyl)-[1-(3-pyridylmethyl)indol-3-yl]-glyoxylamide

N-(Pyridin-4-yl)-[1-(4-chlorobenzyl)indol-3-yl]-glyoxylamide

N-(Pyridin-4-yl)-[1-(2-chlorobenzyl)indol-3-yl]-glyoxylamide

N-(Pyridin-2-yl)-[1-(4-fluorobenzyl)indol-3-yl]-glyoxylamide

N-(Pyridin-4-yl)-[1-(2-pyridylmethyl)indol-3-yl]-glyoxylamide

~~-(4-Phenylpiperazin-1-yl)-[1-(4-fluorobenzyl)indol-3-yl]-glyoxylamide~~

N-(Pyridin-2-yl)-(1-benzylindol-3-yl)glyoxylamide

~~4-(Pyridin-4-yl)-piperazin-1-yl)-[1-(4-fluorobenzyl)-indol-3-yl]glyoxylamide~~

N-(Pyridin-4-yl)-[1-(4-fluorobenzyl)-6-ethoxycarbonyl-aminoindol-3-yl]glyoxylamide

N-(Pyridin-4-yl)-[1-(4-fluorobenzyl)-5-ethoxycarbonyl-aminoindol-3-yl]glyoxylamide

N-(Pyridin-4-)-[1-(4-fluorobenzyl)-6-cyclopentyl-oxycarbonylaminoindol-3-yl]glyoxylamide

N-(3,4,5-Trimethoxybenzyl)-N-(allylaminocarbonyl-2-methylprop-1-yl)-[1-(4-fluorobenzyl)indol-3-yl]-glyoxylamide

N-(Pyridin-4-yl)-[1-(4-fluorobenzyl)-5-methoxyindol-3-yl]glyoxylamide

N-(Pyridin-4-yl)-[1-(4-fluorobenzyl)-5-hydroxyindol-3-yl]glyoxylamide

N-(Pyridin-4-yl-[1-(4-fluorobenzyl)-5-ethoxycarbonyl-aminomethylindol-3-yl]glyoxylamide

3. Use of the compounds of the formula I according to one of claims 1 and 2 for the production of a medicament.

4. Use of the compounds of the formula I according to claims 1 to 3 on their own or in combination with one another for the production of a medicament having antiasthmatic, antiallergic and immunosuppressant/immunomodulating action for transplantation and diseases such as, for example, psoriasis, rheumatoid disorders and chronic polyarthritis.

5. Medicaments comprising at least one compound of the formula I according to one of claims 1 and 2 in addition to customary excipients and/or diluents or auxiliaries.

6. Process for the production of a medicament, characterized in that a compound of the formula I according to one of claims 1 and 2 is processed with customary pharmaceutical excipients and/or diluents or other auxiliaries to give pharmaceutical preparations or brought into a therapeutically useable form.

7. Medicaments according to claims 1 to 6 in the form of tablets, coated tablets, capsules, solutions or ampoules, suppositories, patches, powder preparations which can be employed by inhalation, suspensions, creams and ointments.

8. Process for the preparation of N-substituted indole-3-glyoxylamides of the formula I according to claims 1 and 2, in which R, R_1, R_2, R_3, R_4 and Z have the meaning mentioned in claim 1, characterized in that

a) an indole derivative of the formula IV

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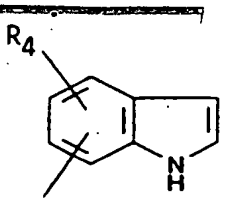

IV

in which R_3 and R_4 have the meaning mentioned, is added to a suspended base in a protic, dipolar aprotic or nonpolar organic solvent, reacted with a reactive compound which carries the radical R_2 and where R_2 has the meaning mentioned, the 1-indole derivative of the formula V

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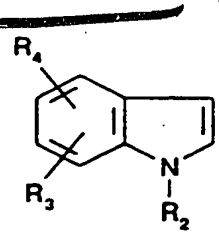

V

in which R_2, R_3 and R_4 have the meaning mentioned, is reacted with a reactive compound of the formula VI

$$(C\text{-}Z\text{-}Hal)_2 \qquad VI$$

in which Z has the meaning oxygen and Hal is a halogen fluorine, chlorine, bromine or iodine, and then with a primary or secondary amine of the formula VII

$$HNRR_1 \qquad VII$$

in which R and R_1 have the meaning mentioned, in an aprotic or dipolar aprotic solvent and the target compound of the formula I is isolated,

or

b) an indole derivative of the formula IV

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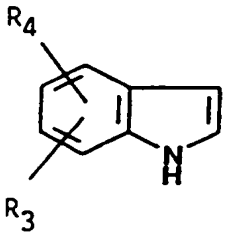

IV

in which R_3 and R_4 have the meaning mentioned, is reacted in an aprotic or nonpolar solvent with a reactive compound of the formula VI

$$(C\text{-}Z\text{-}Hal)_2 \qquad VI$$

in which Z has the meaning oxygen and Hal is a halogen fluorine, chlorine, bromine or iodine, and then in an aprotic or dipolar aprotic solvent with a primary or secondary amine of the formula VII

$$HNRR_1 \qquad VII$$

in which R and R_1 have the meaning mentioned, and then the 3-indole derivative of the formula VIII

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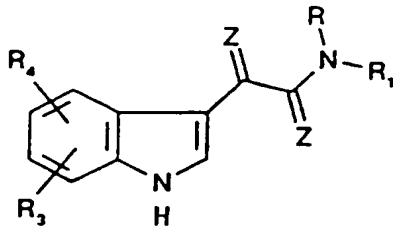

VIII

in which R, R_1, R_2, R_3, R_4 and Z have the meaning mentioned, is reacted in a protic, dipolar aprotic or nonpolar organic solvent in the presence of a suspended base with a reactive compound which carries the radical R_2 and where R_2 has the meaning mentioned, and the target compound of the formula I is isolated.

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